CLAIMS:

1. A method of manufacturing a filter (10) for retaining a substance (14) originating from a radiation source (12), which filter comprises a thin layer (18) which is transparent to extreme ultraviolet and/or soft X-ray radiation (16), characterized in that the filter (10) is resistant to high temperatures.

2. A method as claimed in claim 1, characterized in that first the thin layer (18) and subsequently a support structure (20) for the thin layer (18) are manufactured, or in reverse order, the filter (10) being manufactured such that the thin layer (18) is connected to the support structure (20) in a high-temperature-resistant manner.

3. A method as claimed in claim 1 or 2, characterized in that at least the thin layer (18) is manufactured by means of a chemical and/or physical deposition process.

4. A method as claimed in any one of the claims 1 to 3, characterized in that at least the thin layer (18) comprises preponderantly zirconium, niobium, molybdenum, silicon, zirconium carbide (ZrC), zirconium dioxide, silicon carbide (SiC), silicon nitride (Si_3N_4), boron nitride (BN), or a combination thereof.

5. A method as claimed in any one of the claims 2 to 4, characterized in that the thin layer (18) and the support structure (20) are manufactured as an integral whole.

6. A method as claimed in any one of the claims 1 to 5, characterized in that a layer thickness (22) for the thin layer (18) of approximately 100 nm is achieved.

7. A method as claimed in any one of the claims 2 to 6, characterized in that that the support structure (20) comprises preponderantly zirconium, niobium, molybdenum, silicon, zirconium carbide (ZrC), zirconium dioxide, silicon carbide (SiC), silicon nitride (Si_3N_4), boron nitride (BN), or a combination thereof.

8. A method as claimed in any one of the claims 2 to 7, characterized in that a thickness (24) of approximately 1 μm up to 1 mm is adjusted for the support structure (20).

9. A method as claimed in any one of the claims 2 to 8, characterized in that a material having a melting point of at least 1300 °C is chosen for the thin layer (18) and the support structure (20).

10. A method as claimed in any one of the claims 2 to 9, characterized in that the support structure (20) is constructed in the form of strips, for example forming a grid structure or honeycomb-type woven structure (26).

11. A method as claimed in claim 10, characterized in that the woven structure (26) is generated by means of erosion, laser processing, or photochemical etching.

12. A device for retaining a substance (14) originating from a radiation source (12) by means of a filter (10) which filter (10) comprises a thin layer (18) that is transparent to extreme ultraviolet and/or soft X-ray radiation (16), characterized in that the filter (10) is resistant to high temperatures.

13. A device as claimed in claim 12, characterized in that the thin layer (18) is connected to a support structure (20) in a high-temperature-resistant manner, or in that the thin layer (18) and the support structure (20) can be manufactured as an integral whole.

14. A device as claimed in claim 13, characterized in that a material used for the thin layer (18) and the support structure (20) has a melting point of at least 1300 °C.

15. A device as claimed in any one of the claims 12 to 14, characterized in that at least the thin layer (18) can be manufactured by means of a chemical and/or physical deposition process.

16. A device as claimed in any one of the claims 12 to 15, characterized in that at least the thin layer (18) comprises preponderantly zirconium, niobium, molybdenum, silicon, zirconium carbide (ZrC), zirconium dioxide, silicon carbide (SiC), silicon nitride (Si_3N_4), boron nitride (BN), or a combination thereof.

17. A device as claimed in any one of the claims 12 to 16, characterized in that the thin layer (18) has a layer thickness (22) of approximately 100 nm.

18. A device as claimed in any one of the claims 13 to 17, characterized in that the support structure (20) has a thickness (24) of approximately 1 μm to 1 mm.

19. A device as claimed in any one of the claims 13 to 18, characterized in that the support structure (20) can be constructed in the form of strips, for example in the form of a grid-type or honeycomb-type woven structure (26).

20. A device as claimed in claim 19, characterized in that the woven structure (26) can be obtained by means of erosion, laser processing, or photochemical etching.

21. The use of the filter (10) as claimed in one or several of the preceding claims 12 to 20 in a device for EUV lithography.

22. The use as claimed in claim 21, characterized in that the filter (10) is operated at a temperature of approximately 900 °C to approximately 1300 °C.

23. The use as claimed in claim 21 or 22, characterized in that the temperature for the filter (10) is adjustable such that the retained substance (14) evaporates at the prevailing pressure.

24. The use as claimed in any one of the claims 21 to 23, characterized in that the temperature for the filter (10) is adjustable such that the retained substance (14) evaporates from the filter (10) at a rate higher than that at which it is deposited thereon.

25. The use as claimed in any one of the claims 21 to 24, characterized in that a foil trap (28) is additionally arranged between the radiation source (12) and the filter (10).

26. The use as claimed in any one of the claims 21 to 24, characterized in that the filter (10) seals off the radiation source (12) in the form of a window.

27. The use as claimed in claim 26, characterized in that the substance (14) in the radiation source (12) reaches a partial pressure of approximately 10 Pa.